

2nd Space Exploration Conference

International Exploration Perspective

Moon and Planetary Exploration in JAXA

Dec 5, 2006

Kohtaro Matsumoto

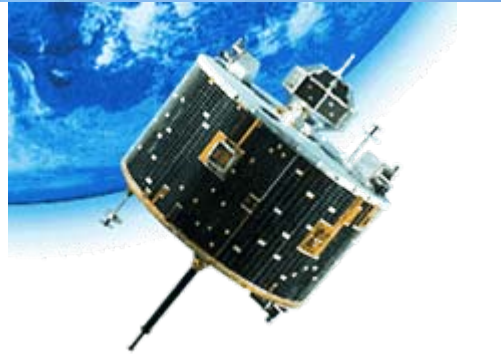
Lunar & Planetary Exploration Team

JAXA

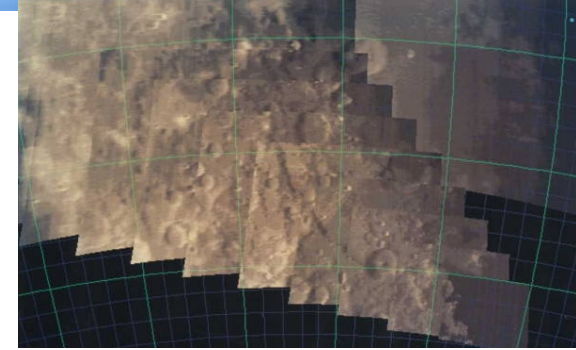
Moon & Planetary Exploration -- Past Results

- Lunar Exploration

- Two satellites into moon orbit
- Hiten impacted on the moon



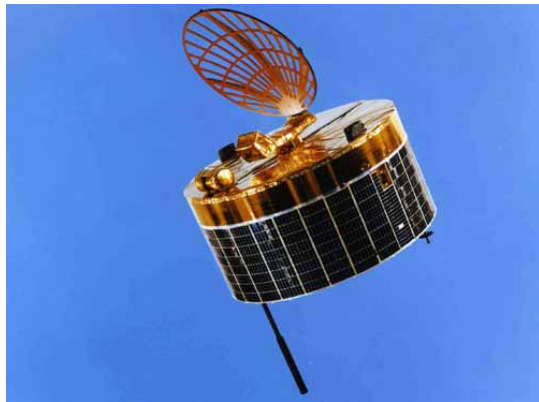
Hiten+Hagoromo (1990)



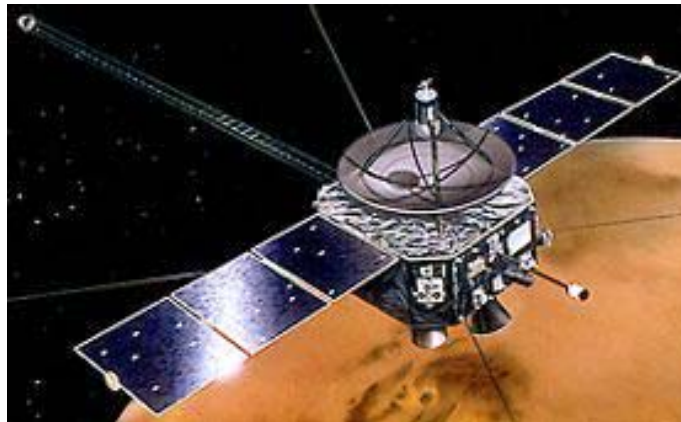
Hard Landing
by Hiten (1993)

- Solar System Exploration

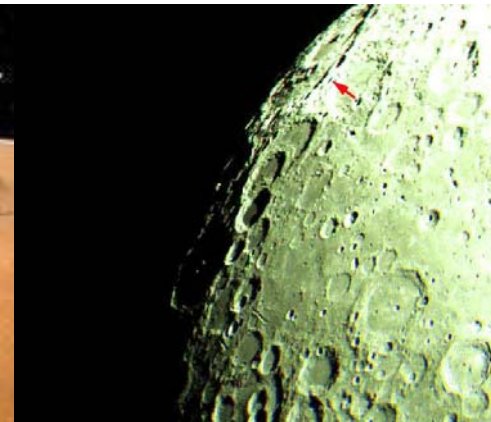
- Sakigake/Suisei : International Halley fleet
- Nozomi : Technology for planetary exploration



Sakigake / Suisei 1985



Nozomi 1998



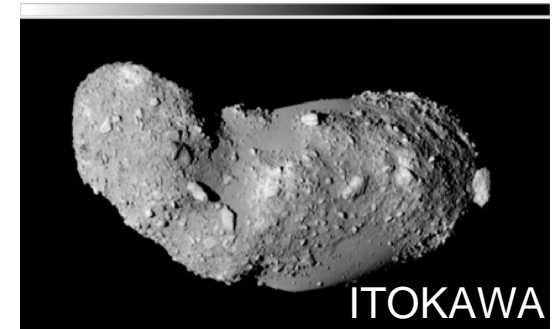
Moon far side image
Giordano Bruno crater

Moon & Planetary Exploration -- Latest & On-Going Activities

- Solar System Exploration
 - Hayabusa 2003
 - Landing on and taking off from other planet
- Lunar Exploration
 - SELENE 2007
 - Largest lunar exploration mission since Apollo
 - In-depth study of the entire moon



Landing on Asteroid



JAXA 2025
Long Term Vision

- *Solar System Exploration
- *Moon Exploration & Utilization

Lunar and Planetary Exploration Team

Implementation of JAXA-2025 Long Term Vision

Lunar and Planetary Exploration Team
(Executive Director Kiyoshi Higuchi)

Lunar and Planetary Exploration Office
Team Director Junichiro Kawaguchi

(Sub Teams)

Manned Lunar activity
investigation

Takahiro Abe / OSFO

SELENE follow-on

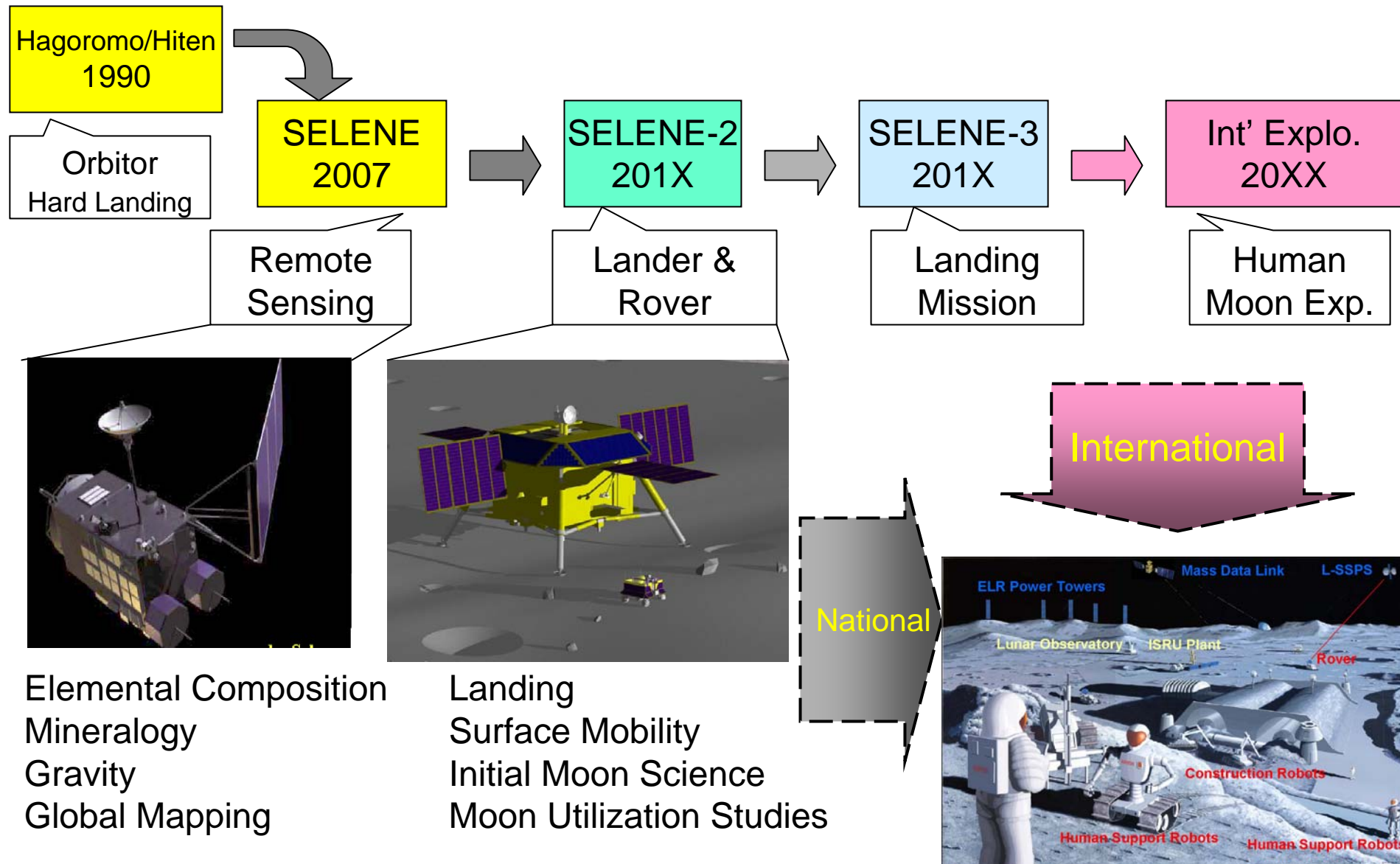
Tatsuaki Hashimoto / ISAS

Solar system exploration

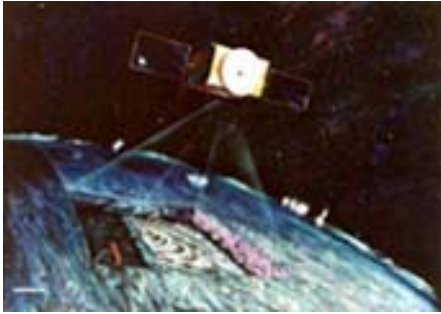
Makoto Yoshikawa / ISAS

- Studying Post-SELENE spacecraft
- Exploring the field of lunar science (including the possibility of a moon observatory)
- Investigating the possibility of establishing an operational base on the surface of the moon and manned lunar space missions
- Looking into solar system exploration
- Examining policies relating to international coordination on space exploration
 - Investigating basic space exploration technology

To the Moon



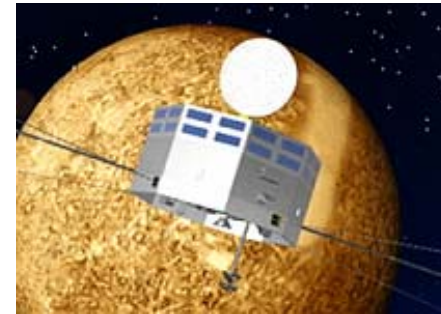
To the Solar System



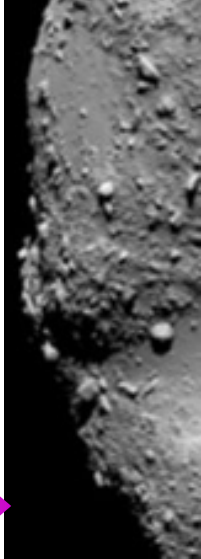
**PLANET-C
Venus Orbiter**



Hayabusa-next



**Bepi-Colombo
Mercury Orbiter**



2010

2011(TBD)

2012

2016(TBD)

◆ Planetary Exploration

**JAXA provides Venus and Mercury
Exploration with international collaboration.**

◆ JAXA focuses and concentrates its activity on

- 1) Primitive Bodies exploration,**
- 2) Planeto-Magnetospheric exploration**

With the advantage in its advanced capabilities.



**Jovian
Magnetosphere Probe**

Basic Concept Behind JAXA's Lunar and Planetary Exploration Strategy

- The scope of human activity is expanding
 - Vision of Space Exploration
 - New era of space exploration
 - from the Moon & Mars
 - the nearest body to Earth
 - to distant bodies within the solar system
- Findings from asteroid explorer Hayabusa
 - Increasing public interest in space exploration
- International space activities
 - Dawn of a new era of full-scale solar system discovery
 - Expectation for human space exploration

Basic Recognition for International Exploration

- Space exploration is intrinsically linked to ;
 - International competition
 - International cooperation.
- For our space activities: Parallel to international
 - Independent space exploration unique to Japan
 - Study as much as possible about asteroids and moon
 - Get actively involved in international cooperation.
- For the benefits of international cooperation
 - For manned missions to the moon
 - Will share a reasonable responsibility with the United States and other countries.

Basic Position of Lunar & Planetary Exploration

- Contributory technology development for space exploration of Moon & Mars
 - for Science, Utilization, and Human frontier
 - for International Space Exploration
 - Exam:
 - Robotics/Roving vehicle, Space suits, Un-manned logistics, Energy, . . .
- Integration of human & scientific exploration
 - Supporting communities for JAXA, . . .
 - Robotic explorer for Moon and solar system as present plan
- Peaceful, creative, and robust international space exploration
 - Program of Programs?
 - Who & how of cooperation for human Moon&Mars exploration

for International Cooperation Activities

- ✓ Several international coordination mechanism for the space exploration
 - ✓ NASA lead Strategy Building Activity
 - Strategic Framework for Sustainable Global Space Exploration
 - SPINETO WSs
 - ISEF proposal@COSPAR
 - ILD proposal@COSPAR & ILEWG
 - Lunar & Mars Spectrum Coordination
 - 'Program of Programs' Approach
- ✓ For effective and advanced international cooperation
 - Tie organically or consolidate these activities
- ✓ Japan will host
 - WS in Mar. 6 – 9 at Kyoto as kick-off

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Sakura in Kyoto Arashi-yama 11